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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/035,602	11/07/2001	John Gardner Fischer	DP-305705	3764

7590 01/22/2004

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EXAMINER

RIVELL, JOHN A

ART UNIT PAPER NUMBER

3753

DATE MAILED: 01/22/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/035,602

Applicant(s)

FISCHER ET AL.

Examiner

John Rivell

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11/10/03(amd), 8/1, 10/30, 11/10/03 (IDS).
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9, 12, 13 and 16-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 12, 13 and 16-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4, 5, 8.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Claims 10, 11, 14 and 15 have been canceled. Thus claims 1-9, 12-13 and 16-20 remain pending.

Applicant's arguments, see paper no. 6, pages 7-9, filed November 10, 2003, with respect to the rejection(s) of claim(s) 1-20 under 35 §103(a) primarily using Hutchings in view of Hoover have been fully considered and are persuasive in view of the now amended claim language including "a valve seat formed on the interior of the housing". Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Wynn (U.S. Pat. No. 4,129,145 cited by applicant).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-8 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hutchings (2,206,356) in view of Hoover (4,964,391 cited by applicant), further in view of Wynn (4,129,145 cited by applicant).

The patent to Hutchings discloses "a check valve... comprising: a valve housing (13) adapted to be disposed in an outlet member (flow conduit 9)...; a valve seat (15) formed on... said valve housing...; a valve member (11, 16) disposed in said valve housing and having a closed position (fig. 2) to engage said valve seat to prevent (fluid) from flowing through the outlet member and an open position (fig. 3) to allow (fluid) to flow through the outlet member,...; and said valve member having at least one outlet port (19) a predetermined dwell distance from said valve seat (note in particular figs. 2 and 3 wherein the left most edge of opening(s) 19 is physically located to the right of the seal 20. Thus during opening movement of the valve, to the left, an amount of time must pass for the left, leading edge of the opening(s) 19 to physically reach the valve seat 15 thus providing a "dwell distance" as claimed and disclosed) when said valve member is in said closed position and allowing fluid flow past said valve seat when said valve member is in said open position" as claimed in claim 1.

Thus Hutchings discloses all the claimed features with the exception of having utility in a "fuel pump of a vehicle" thus controlling "fuel" flow and "a valve seat formed on an interior surface of said housing, said valve seat having a generally frustaconical cross-sectional shape (and) said valve member having an annular groove extending radially therein and a seal disposed in said radial groove for contacting said valve seat when said valve member is in said closed position".

Firstly, the patent to Hoover discloses that it is known in the art to employ a check valve device 28, located in the outlet conduit 30 of a fuel pump 22 of a vehicle leading to an engine 26 of the vehicle for the purpose of preventing backflow of fuel from the engine to the fuel pump.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ the device of Hutchings as a check valve

device in the outlet conduit of a fuel pump feeding fuel to an engine of a vehicle for the purpose of preventing backflow of fuel from the engine to the fuel pump as recognized by Hoover.

Secondly, the patent to Wynn discloses that it is known in the art to employ, on a check valve device, a valve head element which includes a groove formed by surfaces 24 and neck 26, in which is fitted an elastomeric O-ring 38 for cooperation with a "generally frustaconical valve seat" 16 formed on a valve housing 10 "adapted to be inserted in an outlet member" 40, 41 for the purpose of increasing the sealing surface contact area between the head and seat thus perfecting sealing tight closure of the check valve under opposite flow conditions.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ, in Hutchings, a cooperating valve head and seat combination including a groove on the valve head supporting an elastomeric O-ring and a generally frustaconical valve seat, in place of the thin line contact formed by head seal 20 and seat 15 of Hutchings for the purpose of increasing the sealing surface contact area between the head and seat thus perfecting sealing tight closure of the check valve under opposite flow conditions as taught by Wynn.

Regarding claim 2, in Hutchings "said valve member (11, 16) has a hub (16) and a stem (11) extending axially from said hub" as claimed.

Regarding claim 3, in Hutchings "said valve housing (13) has a passageway (12) extending axially therethrough to receive said stem (11)" as claimed.

Regarding claims 4 and 20, in Hutchings, as modified by Wynn, Wynn teaches the employment of a "flow tube" formed by the housing 10 immediately downstream of the frustaconical seat surface 16 for the purpose of providing a uniform annular channel

for fluid flow and thus precluding oscillations of the valve member in a manner as described by applicant.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Hutchings, a downstream "flow tube" attached to the housing 13 of Hutchings to receive the valve head 16 thereof when in a full open position for the purpose of providing a uniform annular channel for fluid flow and thus precluding oscillations of the valve member as recognized by Wynn.

Regarding claim 5, in Hutchings "said valve housing (13) has an enlarged opening at one end (at the right end) of said passageway (12)" as claimed.

Regarding claim 6, in Hutchings "said valve member (11) has a flange (17) at one end of said stem opposite said hub (16) and disposed in said enlarged diameter portion" as claimed.

Regarding claim 7, in Hutchings "said valve member (tubular member 11) has a flow port (the interior bore) extending axially therein" as claimed.

Regarding claim 8, in Hutchings "wherein said at least one outlet port (19) extends radially in said valve member (11) and communicates with said flow port" as claimed.

Regarding claim 20, the above applies equally as well.

Claims 9, 13 and 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hutchings in view of Hoover and in view of Wynn as applied to claims 1-8 and 20 above, further in view of Clifton.

The patent to Hutchings, as modified by Hoover and Wynn, disclose all the claimed features with the exception of having "a metered shape" valve port 19.

The patent to Clifton discloses that it is known in the art to employ a metering shaped valve port 11 in a reciprocating piston type valve device for the purpose of metering fluid flow through the valve device dependent on valve position.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Hutchings, as modified by Hoover and Wynn, a metered shaped valve port for port 19 for the purpose of metering fluid flow through the valve dependent on valve position as recognized by Clifton.

Regarding claim 16, in Hutchings, as modified by Wynn, "said valve member (at neck 26 of Wynn) has an annular groove (for receiving seal 38) extending radially therein" as claimed.

Regarding claim 17, in Hutchings, as modified by Wynn, "a seal (38 is) disposed in said groove for contacting said valve seat (16) when said valve member is in said closed position" as claimed.

Regarding claim 18, in Hutchings, "said valve housing (13) has an enlarged opening at one end (at the right end) of said passageway (12)" as claimed.

Regarding claim 19, in Hutchings "a spring (21 is) disposed about said valve member (11) to urge said seal (20) and said valve member (11) toward said valve seat (15)" as claimed.

Response to Arguments

In response to applicant's arguments that Hutchings, Hoover, and now presumably Wynn lack "a valve seat formed on an interior surface of a valve housing with a generally frustaconical cross-sectional shape and a valve member having an annular groove, a seal disposed in the groove for contacting the valve seat, and at least one outlet port a predetermined dwell distance from the valve seat when the valve member is in a closed position and allowing fluid flow past the valve seat when the

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valve member is in the open position" one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

It is agreed that each reference individually lacks certain claimed features. Anticipation by the reference of all of the claimed features is not required for a reference to be considered proper under 35 §103(a).

Here however, under 35 §103(a), Hutchings is used to illustrate known check valve devices which disclose "a check valve...comprising: a valve housing (13) adapted to be disposed in an outlet member (flow conduit 9)...; a valve seat (15) formed on... said valve housing...; a valve member (11, 16) disposed in said valve housing and having a closed position (fig. 2) to engage said valve seat to prevent (fluid) from flowing through the outlet member and an open position (fig. 3) to allow (fluid) to flow through the outlet member,...; and said valve member having at least one outlet port (19) a predetermined dwell distance from said valve seat (note in particular figs. 2 and 3 wherein the left most edge of opening(s) 19 is physically located to the right of the seal 20. Thus during opening movement of the valve, to the left, an amount of time must pass for the left, leading edge of the opening(s) 19 to physically reach the valve seat 15 thus providing a "dwell distance" as claimed and disclosed) when said valve member is in said closed position and allowing fluid flow past said valve seat when said valve member is in said open position" as claimed in claim 1.

Hoover is used to illustrate that it is known in the check valve art to employ a check valve device 28, located in the outlet conduit of a fuel pump 22 of a vehicle leading to an engine 26 of the vehicle for the purpose of preventing backflow of fuel from the engine to the fuel pump.

Wynn is used to illustrate that it is known in the check valve art to disclose that it is known in the art to employ, on a check valve device, a valve head element which includes a groove formed by surfaces 24 and neck 26, in which is fitted an elastomeric O-ring 38 for cooperation with a "generally frustaconical valve seat" 16 formed on a valve housing 10 "adapted to be inserted in an outlet member" 40, 41 for the purpose of increasing the sealing surface contact area between the head and seat thus perfecting sealing tight closure of the check valve under opposite flow conditions.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, as set forth above, Hoover is used to reasonably suggest to one of ordinary skill in the art the utility of the valve element of Wynn in the environment of a fuel pump feeding fuel to an engine such that the fuel flow from the pump to the engine, in the communication conduit, is one way as provided for by the teaching in Hoover of a one way check valve

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in the fuel conducting line. Further, Wynn is used to reasonably suggest to one of ordinary skill in the art the utility of a valve head element which includes a groove formed by surfaces 24 and neck 26, in which is fitted an elastomeric O-ring 38 for cooperation with a "generally frustaconical valve seat" 16 formed on a valve housing 10 "adapted to be inserted in an outlet member" 40, 41 for the purpose of increasing the sealing surface contact area between the head and seat thus perfecting sealing tight closure of the check valve under opposite flow conditions.

In response to the argument that the "claimed combination is novel and unobvious because the check valve has a pintel that must travel a given dwell distance away from the valve seat before an outlet port is exposed, allowing an increase in flow area to prevent flow restriction", applicant provides no convincing reasoning why the valve "pintel" 11 of Hutchings, which includes "at least one port" 19 located a given distance from the head and seat contact area when in the closed position, must travel a "given dwell distance away from the valve seat (such as seat 15) before an outlet port (at 19) is exposed, allowing an increase in flow area to prevent flow restriction" does not include such function. The "given dwell distance" of Hutchings is latently disclosed as the distance between the left most edge of the outlet port 19 and the right most edge of the valve seal 20 and incorporates much of the linear length of the element 16.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


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A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Rivell whose telephone number is (703) 308-2599. The examiner can normally be reached on Mon.-Thur. from 6:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Scherbel can be reached on (703) 308-1272. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0861.


John Rivell
Primary Examiner
Art Unit 3753

j.r.